

Carving a Custom Seat

Photo #1

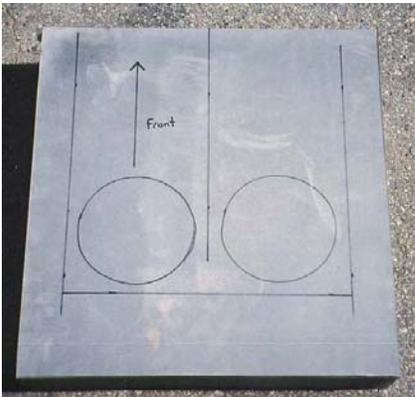


Photo #2



Photo #3



Seat

Carving your own seat from mini-cell, high-density foam is really quite simple and has proven to be more comfortable than any commercially produced seat and often more reasonably priced, even though the foam is rather expensive.

The dark foam is so dense, that you can carve it to within $\frac{1}{4}$ of an inch and not feel the bottom of the boat when you sit on it. Seats can be made a little larger than most commercial seats so that it will displace your body weight over a greater area, reducing pressure points and pain.

The foam is referred to as Y20 by some manufacturers and can be purchased through many retail outlets. We supply the foam for builders or sell completed seats for any boat.

We use the 4-inch thick foam, as this allows us to create a deeper seat, which helps to keep the paddler tight in the boat. The foam can be purchased in lesser thickness.

Begin by cutting a piece of foam large enough for your body, but small enough to just fit into the cockpit opening. For many boats, this is about 18 inches square. A band saw works great, but a simple handsaw does the trick.

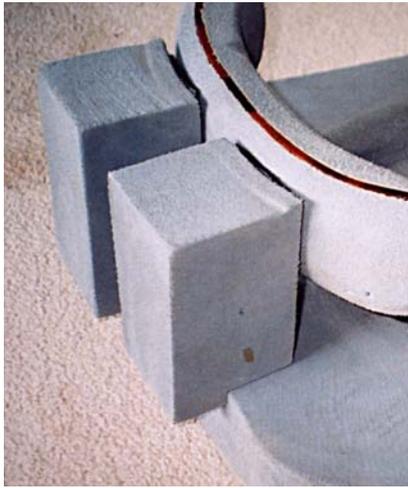
Mark the edge, which will be the back of the seat block and calculate the distance from the back that is required to hold any backrest. **(Photo #1)**

The backrest can be fitted by having a block of foam slide in and rest against the wooden bulkhead **(Photo #4)** This means that the back of the carved seat will be about 3 – 4 inches from the back of the block or 2-3 inches forward of the rear of the cockpit opening. Mark a line across the back of the block at this point. This will be the furthest to the rear of the block that you will carve into.

Once you have determined these measurements, mark a line down the center of the foam from front to back. Mark another line on each side of the block about 1- 2 inches in from the outer edges. **(Photo #1)**

To rough out the seat, a simple wire wheel attached

Photo #4



to an electric drill works well. Others have used an angle grinder. **(Photo #2)** It is best to do this outside, since the foam dust tends to stick to everything and will be throughout your house very quickly. Be advised that you probably should wear a dust mask also. As you grind, be careful, as the wire wheel tends to grab and tear out chunks of foam. You will need to somehow firmly hold onto the foam. You may just kneel on it. Begin by grinding out two holes on either side of the centerline at the rear of the seat. As you grind down deeper, you will need to determine how close you are to going right through the foam, which you do not want to do. Drill a few holes through the foam at the bottom of the two carved holes and measure the thickness of the remaining foam with a pencil or piece of dowelling. The holes will also serve to allow water to drain through the seat when you sit in your kayak. If you are like most, you don't like the feeling of sitting in a puddle of water in your kayak.

Once you have shaped the initial two holes on either side of center at the rear. Proceed to grind two channels from the 4 in. thickness in the front of the seat down towards the two deep holes in the rear. These channels will be progressively deeper as they go to the back of the seat, finally reaching the depth of the rear holes. With these roughed out, grind and join the two large holes at the rear. **(Photo #3)**

Try sitting in the seat now and you will definitely feel where you still need to remove material. When doing this, sit as you would in a kayak, with your knees slightly raised and feet splayed slightly outwards.

As you get close to it being comfortable, you should not use the drill since one small slip will remove too much material. A small Surform or rasp is adequate to finish the fitting. The tapered channels may need to be widened at the front for your thighs, the holes at the rear cut deeper and the rear of the seat tapered away from the front.

When you are happy with the initial fitting, sit in the seat for 10 to 15 minutes on your floor. Mark pressure areas that need finish shaping. Remove a little material at a time and keep trying the seat out. When you are fully satisfied, you can finish sand the foam with drywall sandpaper. This is commonly sold in hardware outlets and comes in varying degrees of mesh just like regular sandpaper. You can work your way to a higher grit and get a very nice smooth finish.

Photo #5



Photo #6



Photo #7



Photo #8



Once you have the seat shaped, you will need to carve out the underside of the block so that it sits on the bottom of your boat without flexing under your weight. Start by cutting off the outside edges and begin to shape the bottom of the seat with the Surform, sandpaper, etc. When the foam block sits nicely in the bottom of your kayak, round off all the corners for a finished look.

Place the seat in your boat and calculate where in the cockpit it will rest. Take another smaller block of foam and cut it so that it wedges under the coaming and on top of the seat. Make this block a little higher than you need so that it wedges in tightly and rest against the bulkhead. This will hold the seat in place and provide the support for your backrest.

Backrest

To make your own backrest, you will need to build a simple mold from plywood. On a piece of paper, trace the outline of the back edge of your cockpit. Cut out two pieces of plywood to this half-moon shape. Glue them to some spacers of plywood as in the top of **Photo #5**.

Glue some scrap 5 – 6 in. strips across the mold and let dry. Once dry, lightly sand so there are no ridges. Glass the outside and apply several layers of epoxy. Once this has hardened, take the backrest off the mold and glass the inside. You will now have a rough backrest as in the lower portion of **Photo #5**. Cut the backrest into a rectangular shape and round out the edges. Seal all the edges with epoxy.

Glue a piece of foam to the front and back of the backrest. You will need a thin layer of foam on the back so that the wood does not scratch your cockpit coaming. Contact cement is the best glue for this purpose.

Once that is dry, you can shape the backrest to your comfort. To attach the backrest to the blocks behind the seat, you can either glue together with contact cement or attach with strong industrial Velcro. You will still need to use contact cement to hold the Velcro in place. Some people have good luck by gluing pieces together with epoxy.

Photo #9



Photo #10



Photo #11



Photo #12



Adjustable Backrest

You can further customize your seat and backrest by making an adjustable backrest. The backrest can be made to recline as required. Instead of using blocks of foam to hold the backrest in place, take a block of wood such as Mahogany or Cherry and create a shape that will be epoxied to the underside of your rear cockpit opening (under the deck). On the front side of the block, fashion two pivot holes. This is done in our shop by attaching with fiberglass and epoxy two half moon shaped pieces of wood in which we have drilled a hole (**Photo #7**)

The finished block is similar to the one in **Photo #6**

We then attached three more of the pivot blocks to the back of the backrest. One in the middle and two lower down near each end. The two lower ones are for the back band to go through. (**Photos #8**)

The backrest is then covered with foam on both sides, leaving space for the back band to slide through (**Photo #9**)

The whole assembly fits into the kayak as in **Photo #10** with a stainless steel clevis pin. (**Photo #11**)

